Light Robotics: light-driven and –actuated micro-robotics for biophotonics at the cellular level

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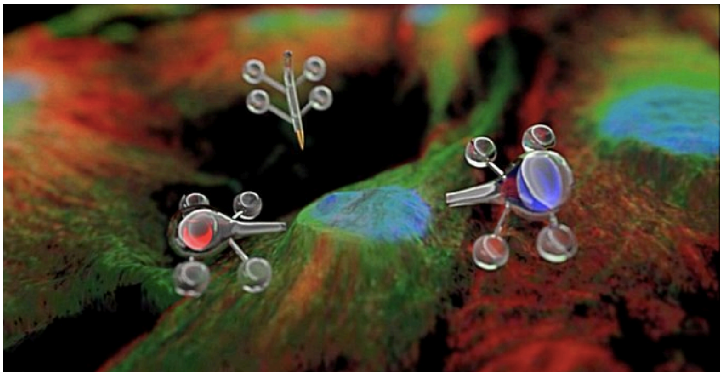
After years of working on light-driven and –actuated micro manipulation [1-14], we can see that a confluence of developments is now ripe for the emergence of a new area that can contribute to biophotonics at the cellular level – *Light Robotics* – which combines advances in microscopic 3D-printing, 3D light sculpting and advanced light-matter interaction and actuation. Last Summer we published a comprehensive Elsevier book volume [15] covering the fundamental aspects needed for Light Robotics including optical trapping systems, microfabrication and microassembly as well as underlying theoretical principles and experimental illustrations for optimizing optical forces and torques. The new book is presenting various novel functionalities that are enabled by these 3D designed light-driven micro-robots (or micro-drones) in addition to various nano-biophotonics applications demonstrating the unique use of biophysical tools based on light robotic concepts. We have endeavored to make this new discipline accessible to a broad audience from advanced undergraduates and graduate students to practioners and researchers not only in nano-biophotonics and micro- and nanotechnology but also to other areas in optics, mechanical engineering, control and instrumentation engineering and related fields.



Light Robotics performed in a microbiologic environment

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